

drinking are associated in the causation of insanity, and adduces data to prove his position.

*Jubbulpore Asylum.*

The lunatics are employed in weaving, rope making, gardening, digging, &c. The manufactured products obtain a ready sale.

*Delhi Asylum.*

The dietary is liberal, and sweetmeats and fruit are occasionally given as a treat. The lunatics are largely employed, principally in out-door occupations, weeding, oil pressing, water carrying, &c. Some of them were permitted to attend the Ram Lela and Dewallee melas in procession, dressed in their best, and the result is said to have been favourable. Pets—monkeys, pigeons, &c., are also kept for the amusement of the patients.

### PART III.—PSYCHOLOGICAL RETROSPECT,

*German Retrospect.*

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The German Retrospect is taken from the following works which I have received :—

Allgemeine Zeitschrift für Psychiatrie und psychisch-gerichtliche Medicin xxx Band ii, iii, iv, v, vi Heft, and xxxi Band, i Heft.

Verhandlungen der Berliner Medicinischen Gesellschaft aus den Jahren 1871, 1872, 1873. Band iv. Berlin, 1874.

Untersuchungen über das Gehirn Abhandlungen physiologischen und pathologischen Inhalts, von Dr. Eduard Hitzig. Berlin, 1874.

From the great interest and importance of the subject, it has been thought best to give a full report of Dr. Hitzig's book, though, owing to the limited space allowed for the German Retrospect, this must be done somewhat at the expense of other observers.

The first paper in the book was originally published in Reichert's and du Bois Reymond's Archiv, 1870, Heft 3. Hitzig commenced by advancing on behalf of himself and his colleague, Dr. Fritsch, their claim to have been the first to shew that the brain is susceptible to electrical stimulation. Fritsch and he experimented with a weak continuous current, which could barely be felt by the tip of the tongue, upon the brain of dogs and other animals denuded of the cranial covering and membranes. Electric stimulation of parts of the hemispheres produced combined muscular contractions of the opposite side of the body. One part of the convexity of the hemispheres of

the dog was thus shewn to be motor; another part not motor. The motor part lies, generally speaking, in front; the non-motor behind. On applying a quite weak current, the contractions are restricted to well-defined groups of muscles. If the strength of the current be increased, contractions are produced in other muscles, and even in muscles of the corresponding sides of the body. It is only by employing weak currents and directing them upon small spots, called for brevity motor centres, that one can induce contractions from particular gyri. The surfaces of brain between the different centres seem insensible to stimulation; if either the distance of the electrodes from one another or the strength of the currents be increased, convulsions were caused which implicated both sides of the body. Drs. Fritsch and Hitzig indicated the centres for the muscles of the neck and for the extensors and adductors of the fore-leg, as also for the flexors and rotators. These are in the frontal gyri. A little behind are the centres for the hind legs and for the facial muscles.

The Anode gives a more powerful stimulus than the Kathode; and when the current is weak it looks as if the Anode alone induced contractions. He rejects the idea of the electric currents being diffused through the brain and acting upon the nerves at the floor of the skull, observing that the current would at least act upon the nerves of the same side, they being nearer. He never observed currents to have been propagated to the medulla oblongata, nor to the near-lying motor nerves of the eye-ball. The diminution of nervous irritability following loss of blood is easily noted. Immediately after death the irritability of the motor centres of the brain disappears, while that of the muscles and nerves is still maintained. Another proof that electric currents are not conducted to the cerebral ganglia below, such as the corpora striata, is furnished by the existence of zones insensible to stimulation, lying around the motor centres. A slight shifting of the electrodes produces immediate difference in the effects. By inserting needles, insulated up to the points with gutta-percha, it was found that no muscular contractions were produced till they penetrated to the crura cerebri. Dr. Hitzig considers the existence of sensible muscular nerve fibres in the brain, as asserted by Schiff, would be an objection to the reality of his experiments, as the effects produced by electricity might be thus caused by reflex action. But he has repeated Schiff's experiments without gaining the same results.

The precautions taken to prevent reflex action arising from the sensitive dura mater seem satisfactory. The reflex convulsions so produced are always on the same side, not on the opposite side as when they follow stimulation of a motor centre.

Dr. Hitzig does not see how we can settle the question whether the motions are produced by stimulation of the cells of the grey matter, or of the conducting fibres. In no part of the brain can the cells be isolated from the fibres; even in the cortical surface of the hemisphere there are still numerous fibres amongst the cells.

Dr. Hitzig removed in two dogs a portion of the nervous grey matter, about the size of a lentil, from the spot where the centres of the fore legs are believed to be, and closed up the parts as well as he could. The result seems to have been that "both animals only partially lost, through removal of a part of the so-named centre for the fore paw, the power to move it. The sensibility of the limb was probably not affected, but they evidently had a deficient consciousness of its position. They had lost the capacity to form complete representations about it. They suffered, too, from a symptom which is common in spinal disease, only here there was assuredly no injury to a sensory conducting nervous tract." This position might, perhaps, be more accurately described thus: "there will remain some channel of motor conduction from the mind to the muscle, but in the conduction from the muscle to the mind there was an interruption somewhere." Perhaps this interruption implicated the terminal seat of the supposed path of the muscular sense. In any case the interrupted part was at the spot of the brain where the vivisection was made. However this may be, it is certain that an injury of this centre only alters without abolishing the voluntary movement of the limb with which the central brain point stands in relation, and that other parts lie open to a motor impulse going from the mind to the limb.

Injuries to the centres whose stimulation causes movements in certain muscles are thus proved to injure the functional powers of the same muscles.

In opposition to Flourens and others, he concludes that single mental functions, probably all, in their entry into matter, or in their evolution from it, are referable to circumscribed centres of the cerebral hemispheres. It may be here observed that the author in this preface declares he neither wishes to range himself in the camp of the idealist nor of the materialist. The question whether reason is the product of an immortal soul or some other natural force he leaves to others.

Dr. Hitzig compares his vivisection upon the two dogs with the results of the study of the symptoms in a French prisoner who had been wounded by a bullet grazing the right side of the head.

This caused necrosis of a part of the parietal bone, extensive inflammation of the membranes, and a limited abscess of the brain in the lower part of the anterior central convolution, just where it passes into the operculum. The most noteworthy symptoms were twitching and loss of power of the muscles of the left side of the mouth and tongue, but never amounting to actual paralysis. This Hitzig explains by pointing out that the abscess implicated the centre of the muscles whose motor powers were diminished. "It is interesting," Hitzig observes, "to compare the motor disturbance in the wounded Frenchman, and in the dogs on whom he had extirpated the centre for the right fore leg. The man had a motor obstruction in the parts supplied to the facial nerve, which was complete, or nearly so, when he tried to

execute combined movements—laughing for example; but when his attention was directed to the muscles whose functions were injured, he could execute movements with them, showing that the impulse required was not so much obstructed as might at first appear—the desired movement was executed in some degree. How different is the state of the muscles in paralysis following injuries to the corpus striatum. But even in such cases the whole nerve is not generally paralysed, for the upper branch retains some of its power. The paralysed portion, however, loses its function completely, and if recovery follows it is only after the lapse of a considerable time.”

Dr. Hitzig at first believed that the imperfect action in the parts supplied by the left facial was owing to the man being unable to form any proper representation of what happened to the parts where the nerve was distributed. This would be the same as what was concluded to be the case with the two dogs on whom he had operated. Against this explanation it could be urged that it was precisely in the muscles which could be acted upon by the conscious will that motion was least affected, and that the greatest abnormality followed the more mechanical or involuntary action of laughing. Hence he concludes that “it is more probable that the impulse of volition framed for both sides in a third place for both hemispheres is taken up and propagated more weakly on account of the partial lesion, but that there was still cerebral substance enough remaining, if the motor impulse were made stronger, to bring the muscles into a well nigh normal action.” Dr. Hitzig then thinks that he has not reached the part of the brain where the impulse of the will to use the facial muscles comes into consciousness; but that he has traced the motor tract from the seventh pair back to the lower part of the anterior central convolution.

In the fifth article upon equivalent regions in the brains of the dog, the monkey, and the human being, Dr. Hitzig points out the difficulties of identifying analagous parts of the brain in animals like the dog and cat with those in man. But the resemblance between the simian and human brain is so close that corresponding convolutions can be pointed out with confidence. As monkeys in Berlin are dear and difficult to be had, Dr. Hitzig only succeeded in getting one for his experiments—a specimen of the *Inuus Rhesus*. On this little animal he tried to find out where were those cerebral centres which in the dog had been found to react through muscular motions under the influence of weak currents. The bone and membranes being dissected off from the parts, he found the motor centres which he sought in the gyrus centralis anterior of Ecker, the ascending frontal gyrus of Turner. About three millimètres from the middle line the centre for the lower limb was ascertained by experiment. Three millimètres to the side lay the centre for the arm, and about seven millimètres farther on along the same convolution was the centre for the nerves of the face; twelve millimètres farther on and six millimètres from the fossa of Sylvius were found the centres for the mouth,

tongue, and jaws. By using the induced current and shifting the electrodes to adjacent points, pronation of the arm, extension of the hand and fingers, and flexion of the thumb upon the two first fingers were successively produced. By irritating the centre for the muscles of the jaws and mouth, contractions of the masseters and movements of the lips were brought on. By acting on a spot immediately above the fossa of Sylvius, there was prolonged opening of the mouth; and in an adjoining spot was found the centre for the muscles of the tongue and those attached to the hyoid bone. These movements of the jaws, lips, and tongue took place on both sides from a stimulus applied only to one side of the brain. This he is unable to explain.

These motions were produced by the stimulus of a weak current of electricity; but the contractions of the muscles of the ear and frontal muscles required a stronger current, hence Dr. Hitzig thinks their cerebral centres are in deeper parts.

The author thinks the centres for the limbs and facial muscles in the dog correspond to the anterior central gyri in man and the monkey. If in the dog they appear to be more in front, this is owing to the smaller development of the frontal lobes, which in man have pushed back the central gyri behind the coronal suture. Dr. Hitzig calls attention to the numerous descriptions of cases where the frontal lobes of the human brain were almost totally destroyed without any injury to motion. He failed to bring out any muscular contractions by stimulation applied behind the posterior central convolution. As far as his information goes, Ferrier, in his experiments on monkeys, has found a greater surface of the hemispheres to be irritable, and has localised the centres in different places. In fact, Hitzig seems to show that the motor tract is confined to the two convolutions which are separated by the fissure of Rolando. He adds an analysis of seven cases of wounds and other lesions implicating the central convolutions of the human brain, followed by paralysis of the extremities or muscles of the tongue and face, and argues that the symptoms in their nature and order can be explained from the site of the lesion.

Dr. Hitzig gives as the result of this investigation that lesions of the upper part of the parietal lobe\* are accompanied by injuries to the movements of the limbs, and that lesions of the lower parts of the parietal lobes are accompanied by injuries to the motions of the mouth and tongue.

Dr. Hitzig has a paper of fifty pages, containing an examination of the experimental researches of Dr. Ferrier. It is by far the most severe criticism to which Ferrier's claims have been subjected; but coming from a foreigner who complains of unfair

\* Hitzig here, with Gratiolet and Bischoff, includes the anterior central convolutions within the parietal lobes. Turner and Ecker make the fissure of Rolando the boundary between the frontal and parietal lobes; consequently, by their arrangement the anterior central frontal convolutions belong to the frontal lobes.

treatment, cannot well be passed over. Dr. Hitzig accuses Dr. Ferrier of having given to the British public a too light impression of the value and precision of the experiments made by Fritsch and himself, and of using their observations as a foundation for his own without proper acknowledgment. He maintains that Ferrier had no right to claim the production of epileptiform attacks through electricity as a discovery of his own, or the serviceable observation that loss of blood diminishes the irritability of the brain to the electric stimulus. In reply to Ferrier's remark that Fritsch and Hitzig did not use the induced current to any extent, he replies that, if they did not use the induced current as often as the continued current, they at least used it in as many experiments as Dr. Ferrier himself did. Hitzig states that he was perfectly aware that contractions could be produced by faradisation, and that he said as much in his published papers. They made use of faradisation to bring out and compare the results obtained through the continued current. The latter form of electricity only produces one contraction, and that at the closing of the circuit. The results, therefore, require very close attention, but are less liable to sources of fallacy. In his investigations Hitzig sought for the weakest current which would give the strongest contraction, and he found that, if the strength of the current were increased, other muscles or groups of muscles were thrown into contraction. He objects to the use of faradisation as the only means of investigation for the following reasons:—Weak currents do not give defined results; strong currents give epileptic fits, which very much disturb the investigation, producing extravasation of blood into the brain substance and injection of the pia mater. He thinks the interrupted currents which Ferrier used were in general too strong, and accuses him of not being sufficiently mindful of the laws of diffusion of the electric currents in unprismatic moist conductors. A layer of blood or serum may often transmit the current in an unlooked for direction, producing effects which on its disappearance cannot be renewed. He points out a number of instances in which he thinks Ferrier has indicated motor centres, while in reality the muscular contractions were owing to the electric current being conducted to other parts of the encephalon. He accuses Ferrier of basing inferences upon insufficient data, and on observations too few in number, indecisive in character, and performed upon animals whose cerebral irritability had become exhausted. Lastly, he doubts whether Ferrier, by means of chloroform, has succeeded as well as he imagines in overcoming reflex movements. His own results differ in many important particulars from those obtained in England. Ferrier makes nearly the whole brain irritable in animals, especially some frontal gyri and the greater part of the occipital and temporal lobes, while most of these parts are regarded by Fritsch and Hitzig as not affected by the electric stimulus. He observes that according to Ferrier almost the whole hemispheres of the cat must be motor, and no room is left for sensory, perceptive, or reasoning functions.

Ferrier gives several centres occasionally distant from one another for the same muscular groups. On the other hand, he claims to have set different muscular groups in motion by currents applied to the same spot of the brain. Hitzig regarded those places as centres from which he could cause muscular contractions with a weak current, but he never found more than one of such centres for each group of muscles. He advances that not only are Ferrier's results in opposition to those of Fritsch and Hitzig, but they do not even agree with one another. Amongst other examples of this species of contradiction he gives: in the place where the centre for the motion for the tail is located in the dog the brain of the cat is not irritable; where the cat wrinkles its eyebrows, and moves its ears, the brain of the dog is not irritable. By touching with the electrode analogous spots in the brain of the dog and cat, the one animal closes the jaw, the other pushes with the paw and stretches out the claws. Nevertheless the brain of the cat resembles closely that of the dog, the principal difference being that it is much smaller. Hitzig has repeated Ferrier's experiments a large number of times upon the dog, the cat, and the guinea pig, and there is great difference in the results which he obtained. It would be impossible to give a proper idea of the numerous special points of discordance indicated by the German physiologist without a literal translation and the reproduction of his plates.

Most of the experiments were performed without the use of narcotics, but occasionally a minute injection of muriate of morphia was used to subdue rigors. Tracheotomy was performed to stifle the cries of the animals.

Amongst other results may be mentioned that the centre given by Ferrier for the muscles of the tail in the dog seemed to Hitzig not irritable, save to a strong current (10 elements); hence he concludes that the contractions produced are the result of diversion of the current.

The convulsions of the frontal lobe seemed not to respond to the electrode save by conduction of the current elsewhere, or by reflex action caused by stimulation of the *dura mater*.

Ferrier, by applying the electrode to point 21,\* Fig. 6, on the supraorbital convolution, caused drawing back of the head, opening of the mouth, and growling noises. Hitzig found no contractions to respond on application to the same point with a current of moderate strength. He supposes that Ferrier had unwittingly excited the first and second branch of the fifth pair, or that his electric current had affected points lying behind the place indicated by the number 21.

Irritation of the centres for the movements of the lips and closing the jaw causes the muscles of both sides to act; sometimes, as in the case of the zygomatic muscles, the contractions are stronger on the same side.

\* See the West Riding Lunatic Reports, vol. iii., p. 52.

Dr. Hitzig performed no less than eight vivisections upon guinea pigs to overthrow Ferrier's conclusions, based upon one experiment, "that the vital irritation, consequent on exposure of the hemisphere, acted on the muscles of the opposite side of the body through the corpus striatum, causing tetanic spasm and pleurosthotonus," and asserts that the curving of the body to one side observed by Dr. Ferrier is in reality a symptom of paralysis. On reading over the passage in Ferrier's paper, it appears to me that Hitzig is probably wrong in his statement that Ferrier believed the symptoms described by him were purely owing to the contact of the air with the exposed hemisphere. He speaks of "the vital irritation of the surface of the hemispheres consequent upon free exposure;" but it is not likely that he would consider exposure to the air as the only source of irritation. Dr. Hitzig leaves very little credit to his adversary, as may be seen from the following translation of his concluding sentences, which in the original are printed in big letters:—"In one word, Ferrier has proved, by a method exposed to many objections, and in a quite superficial way, that through strong electric currents applied to the anterior and basal portion of the brain of the dog and cat, motions of mastication can be produced. In this his merit lies. On the other hand, he has not once found again with certainty the motor centres pointed out by us. He has given a number of results produced by electric stimuli either inconstant or applied in an erroneous manner. And lastly, he has adorned his work, without acknowledgment, with discoveries which belong not to him, but to us."

Remarks like these—and there are a good many quite as strong—will produce an unpleasant effect upon the centres of the brain of the Scottish physiologist liable to be irritated by hostile criticism. Ferrier will no doubt have something to reply; more ink will be spilt, and more dogs, cats, and guinea pigs sacrificed. Dr. Hitzig assures us he much regrets being obliged to undertake the ungracious task of pulling down investigations in the same walks of science; and the author of this retrospect takes no pleasure in the task of bringing a hostile critic into English grounds. But my part is simply to give in as short a form as possible what appears most worthy of notice, and most likely to be of interest, in this important book. Though a certain amount of selection is incumbent, I am neither required to endorse nor to contradict what is reproduced.

The ninth paper in the book is a lengthened inquiry into the derangements of innervation of the muscles and of our representations of relation to space following on galvanisation of the brain. It occupies sixty-five pages. Many experiments are cited, many questions asked, and many suggestions made, but as the author does not seem to have arrived at any settled conclusions, a *resumé* of his paper would be very difficult.

He investigates and describes very carefully the symptoms of

\* West Riding Reports, vol. iii., pp. 34-35.



giddiness or vertigo which follow the passing of an electric current of some strength through the brain. This can be most readily produced by applying each electrode to the mastoid fossa directly behind the ear. Dr. Hitzig describes the whirling of visible objects during the passage of a strong current as resembling the appearance of a wheel circling from the side of the anode to the side of the kathode; on opening the circuit the motion is reversed. Sometimes the person feels himself moving with the head or whole body to the side of the anode on closing the circuit, or to the side of the kathode on opening it. He believes the danger of passing the continued current through the head to be greatly exaggerated, and knows of no cases where serious harm has resulted from its employment. Sometimes when too strong a current is used it produces a feeling of oppression in the occiput, sickness, and vertigo.

Dr. Hitzig examines at considerable length the nature and cause of the involuntary and unconscious movements of the eyes which followed galvanization of the brain. He rejects the idea that this motion, which resembles what is called nystagmus, is produced either by the influence of the current upon the nerves of the orbit or by its direct stimulus upon the muscles. In cases of paralysis of an orbital nerve, it does not appear to conduct the impulse. He believes the motions to be of centric origin. "It is not only possible," he remarks, "but to a certain degree proved, that arrangements exist in the brain by which fibres which at peripheral points belong to several nerves lie close to one another, and are accessible to a common stimulus." We seem, as it were, to have discovered continuations of nerve bundles even on the surface of the convolutions, and Dr. Hitzig found that by inserting into the brain substance needles insulated to the points by gutta percha, contractions of a different character were produced than those excited by superficial stimulation. He thinks that paralysis of the muscles of the eye can be cured by passing the current through the brain. At the end of the article there is a review of three works in which the phenomena of the sense equilibrium and other kindred questions are discussed. As space does not allow us to go farther into this question, we give the names of the works in case any student should wish to consult them.

W. Wundt, *Grundzüge der Physiologischen Psychologie* (Erste Hälfte).

E. Mach, *Physicalische Versuche über den Gleichgewichtssinn des Menschen*, reprint from the *Sitzungsbericht der Akademie der Wissenschaften*, Nov., 1873.

J. Breuer, *ueber die Function der Bogengänge des Ohrlabyrinthes*, reprint from *Med. Jahrbuch*, 1 Heft, 1874.

The book also contains two papers towards the comprehension of some anomalies in the innervation of the muscles. In the first of these studies Dr. Hitzig treats of the occasional phenomena of contractions in paralysed muscles. These contractions often last for

some time, relax during rest, and are brought on or increased by muscular actions of different parts of the non-paralysed members of the body. He regards these involuntary contractions of muscles in limbs more or less paralysed as combined movements. In the healthy body the use of one muscle requires adaptation of other groups of muscles; for example, if we bend the forearm we at the same time fix the chest; and the more force we put into the effort the more muscles do we call into combined action. In man the muscles are more under the control of the will, and there is less reflex action than in the lower animals, hence a lesion to the hemisphere in brutes is not followed by so severe and thorough a paralyzing effect as in man. Those parts which execute the greatest variety of voluntary motions, like the arm and leg, are more frequently subjected to such contractions when paralysed. Their frequency, indeed, is in proportion to the amount of control habitually exercised by the will. The arm is more subject to such contractions than the leg; and the muscles of respiration are entirely exempt from them. Hitzig is disposed to explain the contractions as follows:—An irritated condition exists in the cerebral site of lesion, often consisting in the increase of the connective tissue; through this irritated condition in the centres for the co-ordination of muscular movements the distribution of the voluntary motor impulse is impeded, or directed to channels which in normal states it would not take.

In a second paper on the same subject, Dr. Hitzig describes some cases of facial paralysis which had been followed by epileptiform or irregular motions of different muscles; and from these cases he concludes that interruptions to the conductivity or continuity of sensory and of motor nerves lead in the human subject as well as in the guinea pig to states of irritation of certain motor tracts of the nervous centres. These states of irritation may be the cause of various symptoms, according to the degree and site of the lesion and the constitution of the individual. Dr. Hitzig observes that it has not been previously pointed out that the injury to motor nerves, such as the facial, may be the cause of abnormal movements or convulsions, and he thinks such effects are produced by the injured nerve carrying irritations backwards to the medulla oblongata.

Dr. Hitzig's researches on the functions of the cerebellum have been already noticed in the *Journal of Mental Science* (July, 1873, p. 295). In the book before us he devotes ten pages to investigations on the physiology of this organ. He has studied the subject by vivisection, the application of electricity to animals, and by passing the continued current through the head in man. It does not appear to me that his experiments lead to any very clear conclusion. Deep incisions into the cerebellum, as well as powerful galvanic stimuli, make the animal rotate with great vehemence towards the injured side; but the rapidity of these movements renders their strict observation more difficult than those following smaller injuries. These, says Dr. Hitzig,

cause the same movements which we have observed after extirpation of the flocculus. The animals lay themselves down upon the same side of the body as the lesion of the cerebellum; or if the lesion be more extensive the animal makes a series of forcible alterations in its normal position. Most frequently it throws itself out of any position in which it may be placed to lie upon the same side as the lesion of the cerebellum. If this impulse be very strong, it generally makes one or several rotations, and ends by lying down upon the side.

Dr. Hitzig has come to the conclusion that the rabbit which has received injury to the cerebellum has an impression that it lies upon the uninjured side—I suppose because the muscular sense on one side is destroyed—and that the violent movement to the opposite side is nothing else than a voluntary exertion to restore the apparently destroyed equilibrium.

Many other movements, however, take place after lesions to the cerebellum. The eyes are fixed or move about; and the position of the head and different parts of the body are rapidly changed in a great variety of ways. Sometimes the animal places the fore paws and one buttock upon the table, as if he had a defective notion of the position of the belly. In a note, Dr. Hitzig asserts his distrust of Ferrier's conclusions that the cerebellum regulates the motions of the eyeballs. He thinks Ferrier used too strong a current of electricity, and that it might have spread to the corpora quadrigemina. He admits, however, that nystagmus is frequently produced by irritations of the cerebellum. In the concluding article of the book, Dr. Hitzig gives some experiments which corroborate the view that injury to the grey matter of the hemispheres may be a cause of epilepsy. In a previous chapter he gave an account of two cases intended to show that epileptic or epileptoid attacks may follow wounds of the peripheral nerves. In fact, epilepsy may attend upon any kind of injury of the nervous system, central or peripheral.

In the "*Zeitschrift*," xxx Band, 6 Heft, Dr. R. Loechner gives a contribution to the localisation of the functions of the brain.

A man of 36, who had been already in the asylum at Klängenmünster, afflicted with melancholia, with hallucinations in hearing, after being dismissed, shot himself in the forehead with a pocket-pistol. The bone did not appear to be penetrated, and no symptoms of local injury to the brain at first appeared; but about a month after he became completely paralysed on the right side, and could only utter the words ja, ja, although he seemed to understand what was going on around him. Two days after the paralysis being noticed, he was seized with convulsions, which only implicated the paralysed side. About a fortnight after this he died.

It was found on examination that three fragments of the inner table of the frontal bone above the crista galli had been driven in upon the brain, and had lighted up inflammation of the membranes and cerebral substance. There was an abscess of the size of a bean on the left

side in the second and frontal gyrus above two centimètres from the longitudinal fissure, and above three centimètres from the anterior central convolution. This abscess was connected with a larger and more deeply situated one, which lay under the superior and middle frontal convolutions (the first and second of Meynert). On the right hemisphere the cerebral substance was intact, save at a small spot on the superior frontal convolutions next the seat of injury, on the left side. The other parts of the brain appeared normal.

It does not strike me that the learned doctor succeeds in explaining the symptoms by a reference to physiological data. He says the mental functions were quite intact, and this with injury to at least one side of the frontal lobes. There was aphasia, but the third frontal convolution was not affected; there was loss of power of the muscles of the face, with occasional convulsive movements, but the motor centre of the facial, as given by Hitzig, does not seem to have been implicated. The central convolutions were healthy, but one side of the body was paralyzed. It is scarcely necessary to add that we have on record many cases of wide-spread destruction to the frontal lobes without paralysis of the limbs.

If paralysis were necessarily dependent upon injuries to certain defined portions of the brain, one fails to see why the function of these parts was not made out years ago.

Virchow has, in the "*Verhandlungen der Berliner medicinischen Gesellschaft*," contributed three papers of interest to the anthropologist. One is upon the "*Two-headed Nightingale*," a monstrosity which was exhibited in our own country, and described in the newspapers at the time. The learned professor describes these two sisters, who are united together in the lower part of the body, in his usual thorough manner. He mentions similar cases of which he has read. There is one noticed in Buchanan's "*History of Scotland*," in the reign of James IV., to which his attention has apparently not been directed. He has also a good account of the Russian hairy men, which have already been described in our medical journals. He reduces excessive growth of hair (*Hypertrichosis*) into three groups—

1.—Excessive hair growth of the masculine type in women.

2.—Hair growth upon *nævi*.

3.—The form where the teeth are deficient in number, whose peculiarities cannot be referred to any known pathological laws or conditions, but which perhaps might be, in some measure, elucidated by a pathological examination. He observes that most of the abnormal conditions lie in the parts supplied by the trigeminus, and thinks them dependent upon some change of the nervous system.

The third paper is on a curious case of hermaphroditism.

There are in the *Verhandlungen* some papers by Hitzig and Westphal, which have already been noticed, in one way or another, in our *Retrospects*.

In the xxxi Band, 1 Heft, of the Zeitschrift, Dr. Kelp has a paper on insanity in children. He reproduces the case of a girl, six years of age, who was admitted into an asylum, suffering from mania with convulsions, and complete aphasia. Though unable to utter a syllable, she could move the tongue and lips with ease. She passed into a shy, tearful condition; the symptoms of insanity soon disappeared; but she had again to go through the process of learning to speak like a little child. In five months she was dismissed, when she could speak fluently, though somewhat slowly.

Dr. Kelp gives the case of a boy of sixteen, afflicted with melancholia, who had attempted suicide, and had delusions of hearing. He recovered in seven months. The author also gives a case of *folie circulaire*, in a boy of thirteen. He was a dull child, and had been so often punished at school, on account of his slow progress, that he became deeply melancholy, and tried to kill himself. The melancholy alternated with mania, in which he whistled and sang day and night, tore his clothes, and was filthy in his habits. A case of this kind is very rare at such an early age. At a meeting of the Psychiatrischer Verein of the Rhine provinces, reported in xxx Band, ii Heft of the Zeitschrift, Dr. Feith gave an account of a boy of five years of age, who passed through a typhus fever which reduced him to a state of great weakness. On the 9th of December he was able to get up, but had lost, in a great degree, the use of his legs. His mental conditions seemed altered, and he was found to be aphasic. On the 31st of December his speech returned. He spoke almost without intermission the whole day, and could say everything he wanted. In a fortnight the ataxia of the lower limbs passed away, and the child became quite well. Dr. Feith supposes that, as a sequel to the hydræmia, there were small exudations in the brain, especially the second and third left frontal convolution, and in the spinal cord, which, on the health mending, had been reabsorbed. In a discussion which took place, Dr. Nasse declared against the view that aphasia was dependent upon disease of the left frontal convolution. Instances have been observed in which these convolutions had been destroyed on both sides without any aphasia; and in Behier's collection of cases, there were 122 instances of destruction of the left third frontal gyrus, and in 82 of these there were no aphasia.

Dr. Kind gave to the Psychiatrischer Verein Niedersachsens und Westphalens, reported in the Zeitschrift xxx Band, iii Heft, some statistics upon the height of idiots, collected from seventeen hundred cases. The general results are that idiots grow more slowly, and attain their greatest height at a later period than normal men.

In the same number of the Zeitschrift, is a report about an Institution for Idiots near Leipzig (the Kern'sche Idioten Anstalt), with a few cases illustrative of the success of the treatment pursued. There is a curious account of melancholia occurring in a girl as early as seven years of age, which passed away in her ninth year, after eight months'

residence in the Institution. Her intelligence also improved, but she remained simple-minded.

In xxx. Band, iii. Heft., of the *Zeitschrift*, Dr. Wille treats of the insanity of old age, which he reduces to several types. He distinguishes occasional insanity characterized by depression, altered habits, unsociability, indisposition to employment. It may be acute or chronic, end in recovery, or pass into dementia. Dr. Wille gives a full description of senile dementia, and mentions a great variety of symptoms. One of the most constant of the later symptoms is a failure of the senses; the patients become dull of hearing, their sight weaker, and they lose smell and taste. Another symptom he describes is the handwriting, which is almost illegible, full of mistakes, whole syllables or words left out, sentences wrongly placed, and false constructions which give work to the lawyers. Too much stress should not be laid on this symptom, as I am sometimes quite bewildered by the interjection of clauses, and the cumbrous construction of sentences of some of the learned German writers, from whose works this *Retrospect* is prepared.

Dr. Wille gives the distinctive diagnosis between dementia the pure result of old age, and insanity appearing in the old, the result of dissipation, progressive paralysis, epilepsy, or softening of the brain. The most common lesions are calcification and atheroma of the arteries, and atrophy of the grey substance. The latter alteration is only to be found in the worst cases. Thickening of the membranes is found in one half the cases. The alterations seen through the microscope consist of the development of fatty granules in patches and stripes, especially at the bifurcation of the vessels. In the neighbourhood of the regenerated muscular walls, there are often accumulations of blood corpuscles, and numerous hæmatin crystals. This condition of the vessels leads to atrophy of the brain and fatty degeneration of the nerve-cells and vessels. Dr. Wille finds that the alterations in the tissues of the spinal cord, as viewed by the naked eye, as a general rule, agree with those in the brain. But this agreement did not hold good with the condition of the membranes, nor was it so common with the microscopical appearances.

Dr. L. H. Ripping, in the *Zeitschrift*, xxx. Band., iii. Heft., treats of the cystoid degeneration of the cortical substance of the brain in paralytic patients. He has studied this condition in five cases. He found numerous cysts, about the size of a pin head, scattered through the grey matter of the brain. In one case there was as many as from twelve to sixteen cysts in the square inch. In one instance, the surface of the hemisphere had a violet-red colour; in two others it is described as a greyish-red. Dr. Kipping thinks the cysts are made out of widened perivascular spaces, save in one instance, where the cysts seem to be too large for his hypothesis, and he is reduced to make them out of a part of the epicerebral lymphatic cavity. In all the five cases there were melancholia, hypochondriac feelings, and tendency to suicide. There were intercurrent fits of paralytic exaltations with

gross exaggerations in their conceptions, and aimless activity. In all cases there was paralysis of some parts of the body. In the fifth patient the state of exaltation was wanting.

The paper is illustrated by two engravings.

In the *Zeitschrift*, xxx. Band. v, Heft, Dr. Jehn gives the results of his studies of the eyes of insane patients through the ophthalmoscope, made at Siegburg and other places. He shows the apposition between the results of Bouchut and Dubuc, Köstl, Albutt, Tebaldi and others, which must render one who has not made original researches on the subject very doubtful as to the exactness of acquired results. For example, Albutt found in cases of mania 43 per cent. where alterations could be observed under the ophthalmoscope. A similar result was obtained in dementia. Tebaldi, on the contrary, found in idiopathic acute mania no permanent alteration of the posterior chamber of the eye. In progressive paralysis Albutt and Tebaldi agree in finding a diseased condition of the optic nerves, leading to atrophy almost constant. Galezowski observed atrophy only in one case out of forty, Gräfe and Westphal in two cases out of fourteen.

Dr. Jehn's results cannot, of course, agree with those of observers who disagree with one another. In seventeen cases of mania, for example, he could only find one case of diseased condition of the retina. This consisted in venous congestion and tortuosity of the vessels. He, however, remarks that in his seventeen patients there were no symptoms of meningitis, which were believed to be present in the cases studied by Albutt.

Dr. Jehn would have wished more numerous cases of epileptic insanity to study. His own results do not agree with those observers who found dilatation of the arteries and contraction of the veins, with venous pulsation, the characteristic alteration of the eye in epilepsy.

Those who have studied the question agree that the so-called white atrophy of the optic nerve is by far the most common alteration in general paralysis, though they differ as to its degree of frequency. In seventeen cases of general paralysis examined at Siegburg by Drs. Saemisch and Mandelstamm, they found two of double, one of single atrophy of the optic nerve. Twice there was commencing atrophy, and once a pale colour of the papillæ, probably depending upon degeneration of the nerve substance. Out of thirty-four eyes examined, twenty-six shewed no alterations which could be connected with the morbid condition of general paralysis. In thirty cases examined by Dr. Jehn himself, two had atrophy of the optic nerves on both sides; two others on one side; another had excavation of the papillæ. In five cases, although the vision did not appear to be much impaired, atrophy of the optic nerves was suspected, on account of the pale colour of the flat papillæ, which shewed no indication of the lamina cribrosa. The other alterations noticed were complications from distinct diseases. Dr. Jehn regrets that we have not succeeded in

establishing a relation between the alterations in the retina observable through the ophthalmoscope, and the types of insanity, such as mania, melancholia, delusional insanity, which are mere generalizations derived from the study of mental symptoms. It may be remembered that we have not yet succeeded in finding alterations of the brain itself to correspond with these definitions. In the present state of our knowledge, Dr. Jehn thinks ophthalmoscopic examination most likely to yield results in deep seated disease of the brain, cerebral tumours, and many cases of chronic meningitis.

In the same number of the *Zeitschrift* there is a report taken from *L'Ippocratico*, of the results of the investigations of L. Monti in 200 cases, at the asylum of Pesaro. He found that

1—Ophthalmoscopic observation in general gives very often a negative result.

2—In mild cases of mania and melancholia, especially in the last, the results are negative. In some cases more severe and accompanied by symptoms of considerable excitement, congestion of the papillæ and retina is observable.

3—In melancholia stupida, or attonita, the serous papillary infiltration is most common.

4—In cases of simple dementia there are more positive results, serous papillary infiltration and congestion of the papillæ and retina being not unfrequent.

5—The same alterations may be found in progressive general paralysis.

6—The ophthalmoscopic examination of the eye in idiocy does not lead to any indication throwing light upon the state of the encephalon.

Dr. E. Mendel, in the "*Verhandlungen der Berliner Medicinischen Gesellschaft*," has a carefully matured article upon the treatment of melancholia, with an account of some cases. I take advantage of his recapitulation of the results obtained.

1—In a number of cases of chronic melancholia, thickening of the pia mater covering the occipital lobes, the result of stases of the blood, was observed.

2—Hyperæmia is peculiarly liable to bring about melancholia. The great majority of pathological alterations in the different organs are at first accompanied by hyperæmia, and this holds good with the brain, though the mental manifestations of melancholia often mask the other symptoms of brain disease.

3—The good effects of morphia are accompanied by a diminution in the temperature of the external auditory meatus. This seems to go along with changes in the condition of the brain.

4—In those cases where morphia has a curative effect, there are a series of indications of pressure on the brain, which may occur either together or separately. The dilatation of the pupils is unequal; there is loss of power of the facial nerve, and deviation of the tongue and of the uvula. Where these symptoms fail morphia does no good.



In hysterical melancholia this drug often does harm. In such cases Dr. Mendel has recourse to alcohol and tincture of quinine, from which he has often obtained favourable results. Dr. Mendel, on the whole, much approves of the use of morphia in melancholia. It often averts the progress of the malady at the outset, and lessens the misery of the symptoms where it does not wholly remove them.

Moritz Meyer, in the "Verhandlungen der Berliner Medicinischen Gelleschaft," gives an account of four cases of exophthalmic goitre, in which great benefit was derived from galvanization applied to the sympathetic nerve; the one electrode was applied to the sub-maxillary region, the other to the closed eye, or to the goitre on the opposite side, and a weak current kept up for two or three minutes. The number of applications required was above sixty. The exophthalmus and the size of the goitre diminished, and the general health improved. In one case the menses returned after having been absent for nearly four years. There was no diminution of the frequency of the pulse, or in the force of the heart-beat and palpitations, as had been noticed by Dusch, Eulenburg, and Gutmann, who have recorded the results of the same medication.

The large amount of space allowed to Hitzig's investigations has compelled us to shorten our reports of the other contributions in the periodicals before us, many of which are well worthy of perusal. Amongst these papers are two articles by Dr. Flemming in the *Zeitschrift* xxx. Band, 4 and 5 Heft, in which he examines, at considerable length, the subject of delusions, dreaming, the delirium of fevers, the result of sunstroke, toxic insanity, such as pellagra and that resulting from Indian hemp.

In the same journal, xxx. Band, 2 Heft, Dr. Tigges has a paper upon the reaction of the nervous and muscular system in the insane to electricity, written in his usual careful and thorough-going manner. In the same Heft Dr. Scholz treats of feigned insanity.

In 3 Heft, Dr. H. Reimer gives us his views on the Therapeutical Treatment of Mental Excitement.

In 4 Heft, Dr. Gutsch writes upon the difficult question, What to do with our Criminal Lunatics, and Dr. Zenker upon Intermittent Respiration in Insanity. Dr. R. Schreter (5 Heft) treats of Menstruation in its relation to Insanity.

In xxxi. Band, 1 Heft, there is a paper on Legislation for the Insane, with especial reference to the French law, and another upon Suicide in the Asylum of Leubus, by Dr. Fröhlich.

In the same Heft, Dr. Ripping gives the result of his visits to some English asylums. Dartford, Haywards Heath, Brookwood, Moulsham, Whittingham, and Broadmoor are reviewed in the present number, and a continuation is to follow. Dr. Ripping seems favourably impressed with what he saw of the English asylums.

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